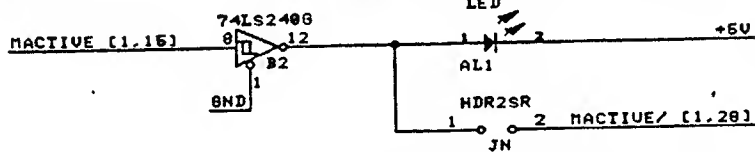


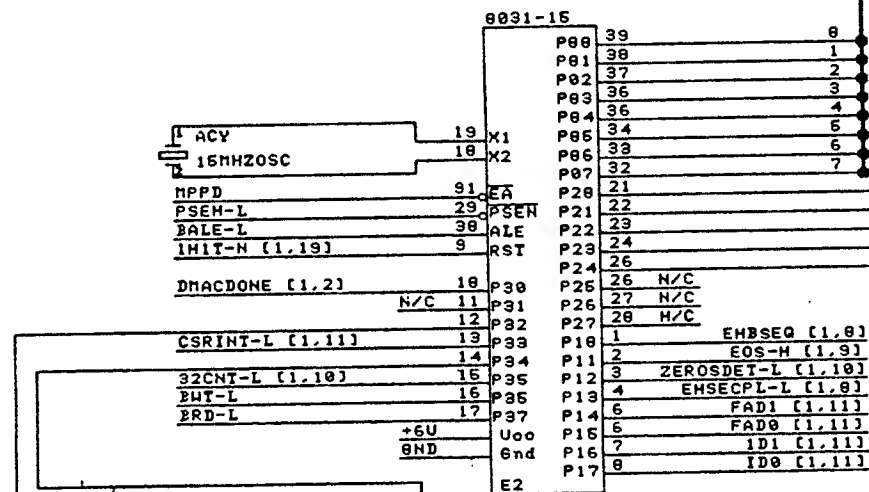
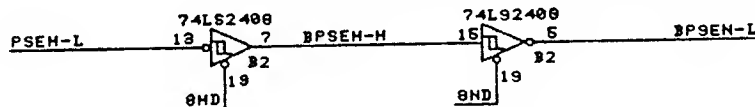
UNIT ACTIVE LED
LED IS ON WHEN CONTROLLER IS BUSY
LED IS OFF WHEN CONTROLLER IS IDLE



UNIT ACTIVE JUMPER
INSTALL FOR UNIT ACTIVE STATUS
ON CONNECTOR PIN P2-42



SELF TEST FAILURE LED
LED IS ON DURING SELF TEST
LED IS TURNED OFF IF SELF TEST PASSES



74LS245

7 18 A 2

6 17 B 3

5 16 C 4

4 15 D 5

3 14 E 6

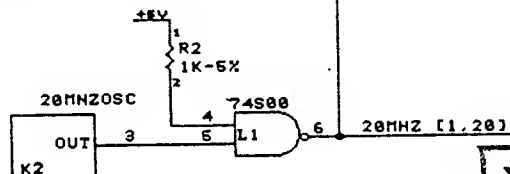
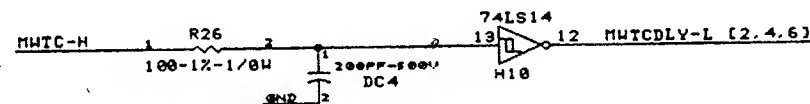
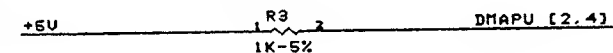
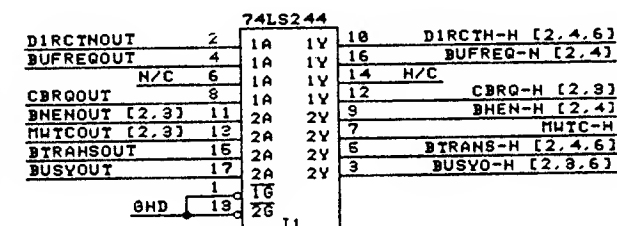
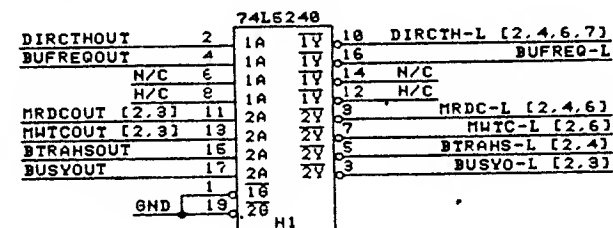
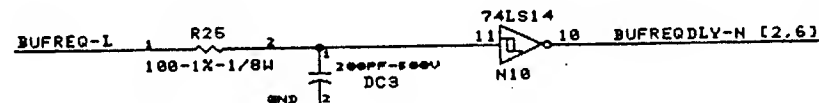
2 13 F 7

1 12 G 8

8 11 H 9

1 DIR

19 N3



TITLE: 451
DMA CONTROL LOGIC

| | | | |
|-----------|----------------------------|-------|-----------|
| SIZE B | DRAWING NO. 300-160-400 | | REV G1 |
| SHEET | 2 OF 21 | LEVEL | 2 |

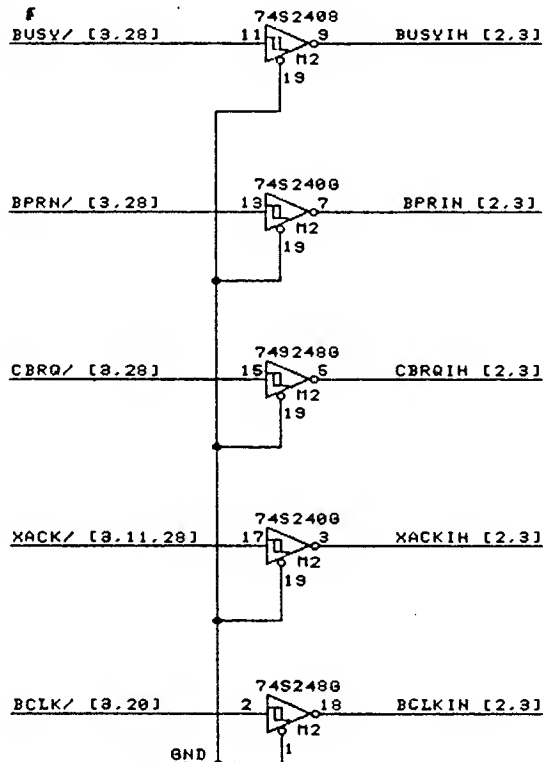
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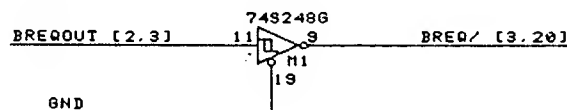
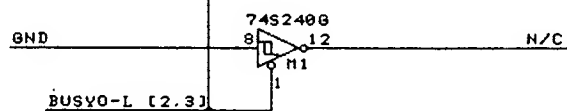
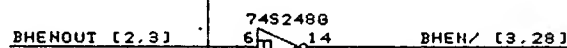
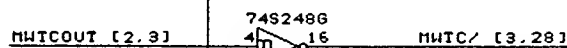
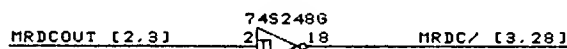
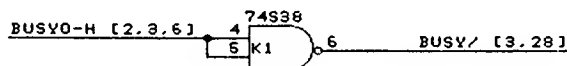
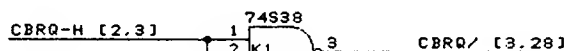
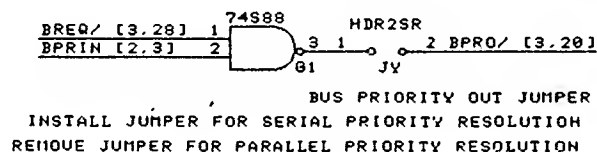
COPY NO. L 714

MULTIBUS CONTROL SIGNAL RECEIVERS

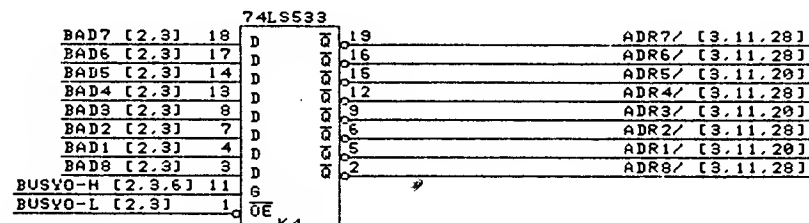
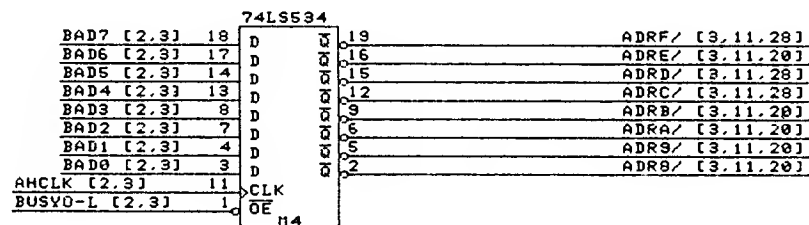
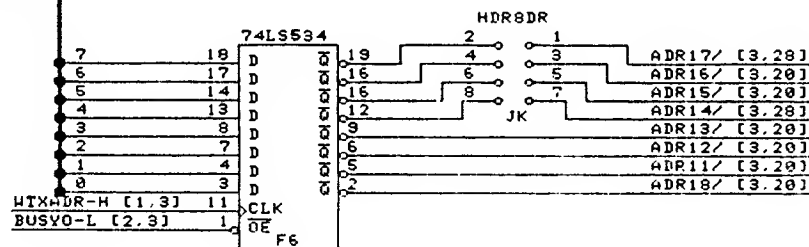


MULTIBUS CONTROL SIGNAL DRIVERS

IDB [1,2,3,9,10,12,13,14,15]



MULTIBUS ADDRESS BUS DRIVERS



TITLE: 451
DMA MULTIBUS INTERFACE

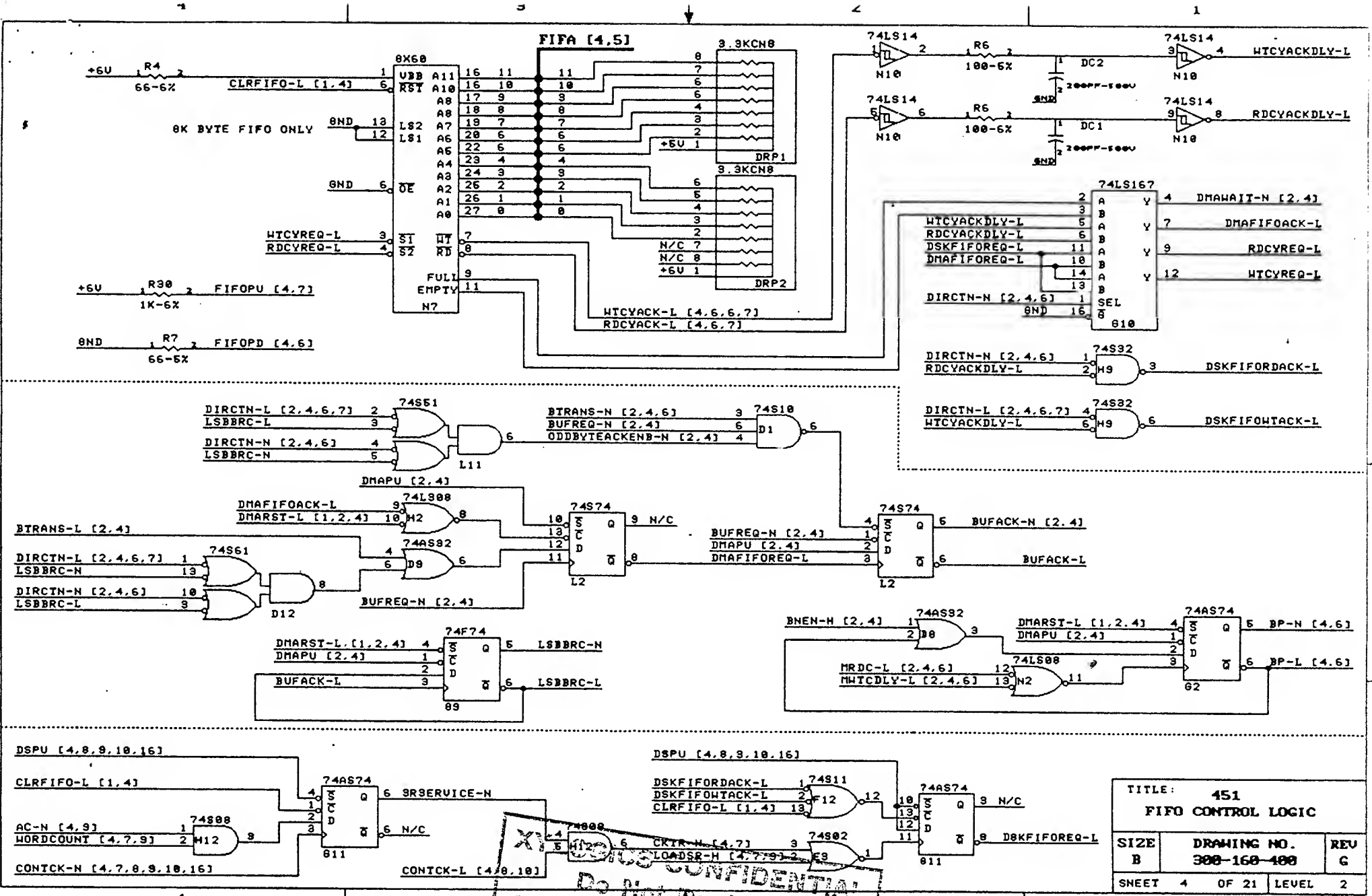
| | | |
|---------------|----------------------------|----------|
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 3 OF 21 | | LEVEL 2 |

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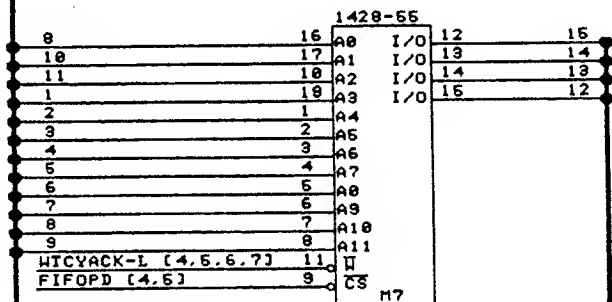
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| | | |
|----------------------------------|----------------------------|----------|
| TITLE: 451 FIFO CONTROL LOGIC | | |
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 4 | OF 21 | LEVEL 2 |

FIFA [4.5]

+5V C37 2 GND
.047uF-50V

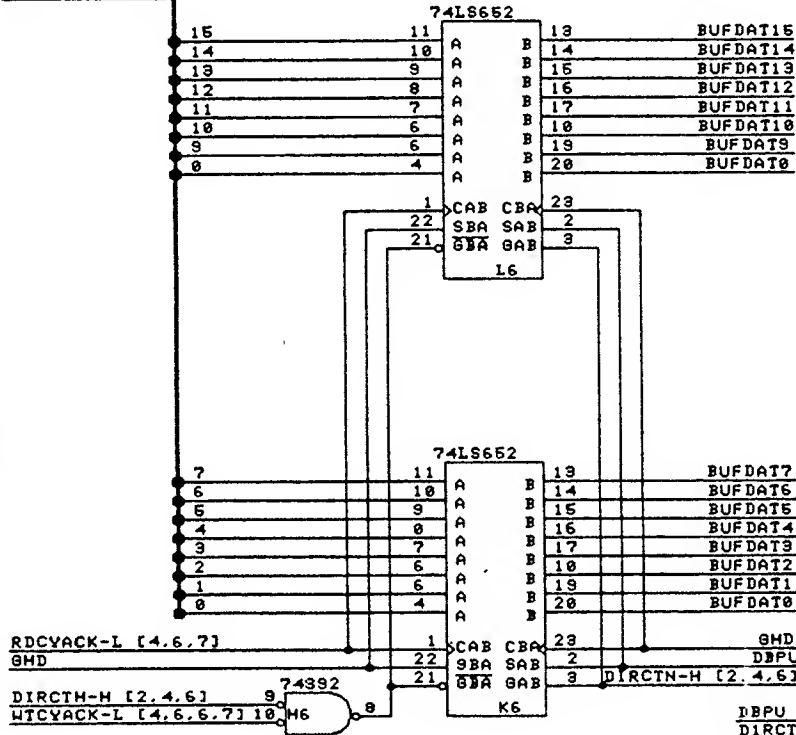


MULTIBUS DATA TRANSCEIVERS

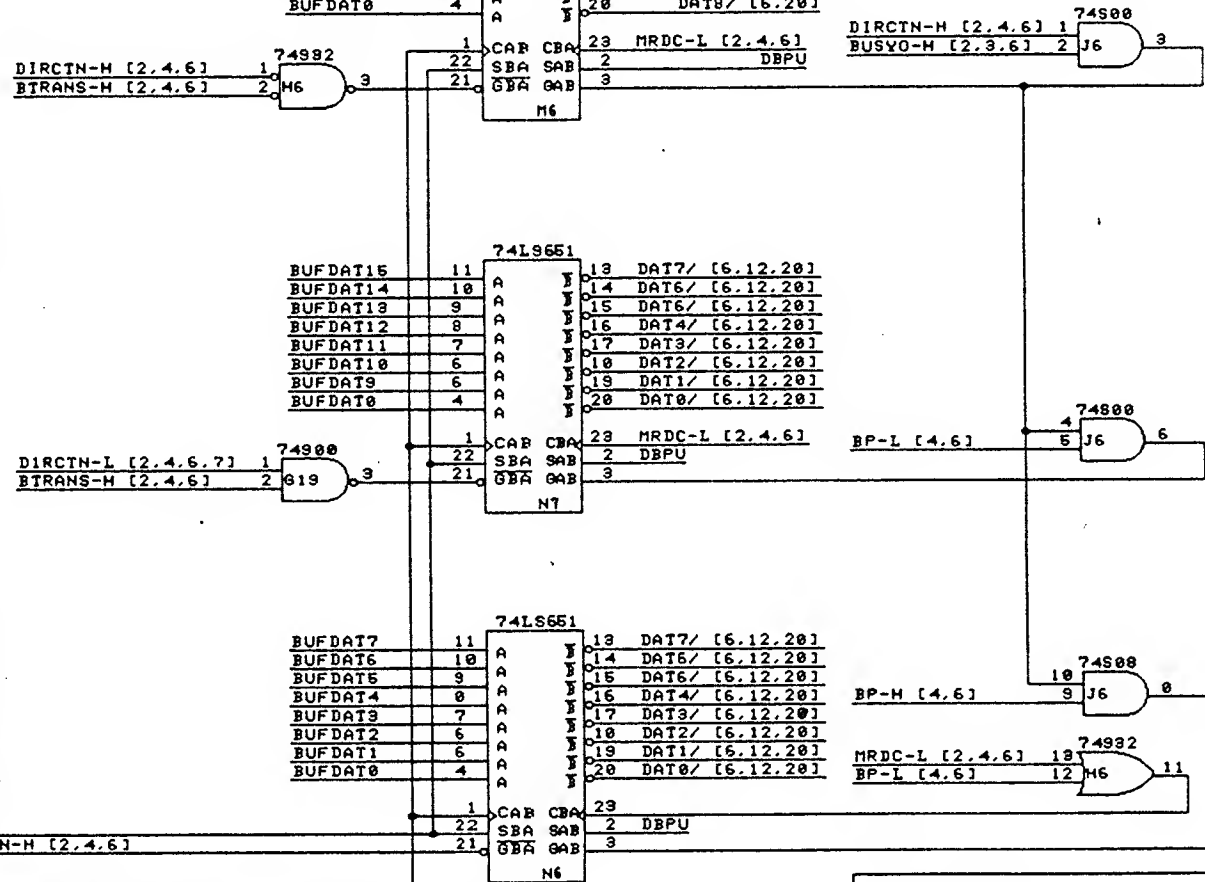
+5V R8
1K-5X DBPU

FIFO PIPELINE TRANSCEIVERS

FIFD [5,6,7]



| | | | | |
|----------|----|---|----|--------------|
| BUFDAT15 | 11 | A | 13 | DATE/ [6.20] |
| BUFDAT14 | 10 | A | 14 | DATE/ [6.20] |
| BUFDAT13 | 9 | A | 15 | DATE/ [6.20] |
| BUFDAT12 | 8 | A | 16 | DATE/ [6.20] |
| BUFDAT11 | 7 | A | 17 | DATE/ [6.20] |
| BUFDAT10 | 6 | A | 18 | DATE/ [6.20] |
| BUFDAT9 | 5 | A | 19 | DATE/ [6.20] |
| BUFDAT8 | 4 | A | 20 | DATE/ [6.20] |



BUFREQDLY-H [2,6]

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| | | |
|----------------------------|----------------------------|----------|
| TITLE: 451 | | |
| MB/FIFO DATA BUS INTERFACE | | |
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 6 OF 21 | LEVEL 2 | |

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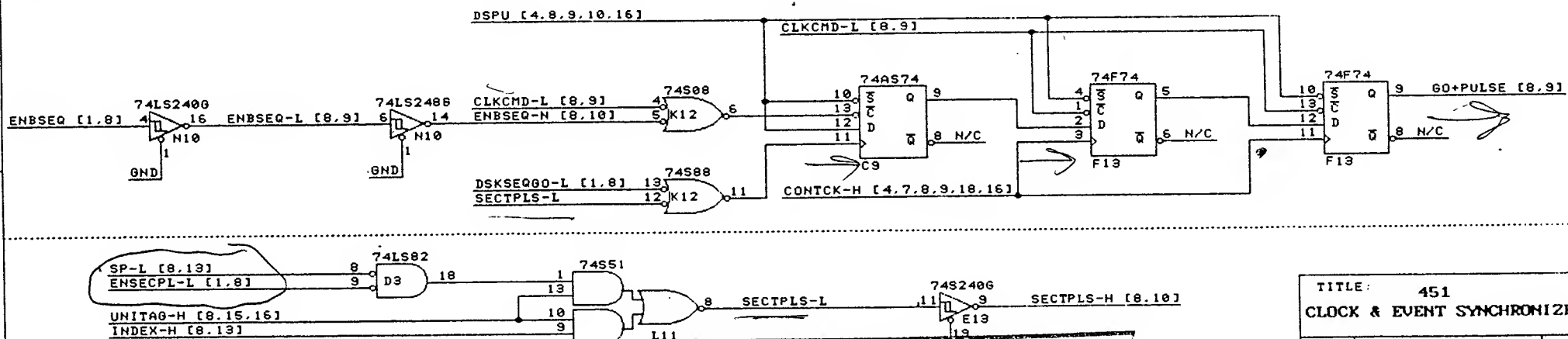
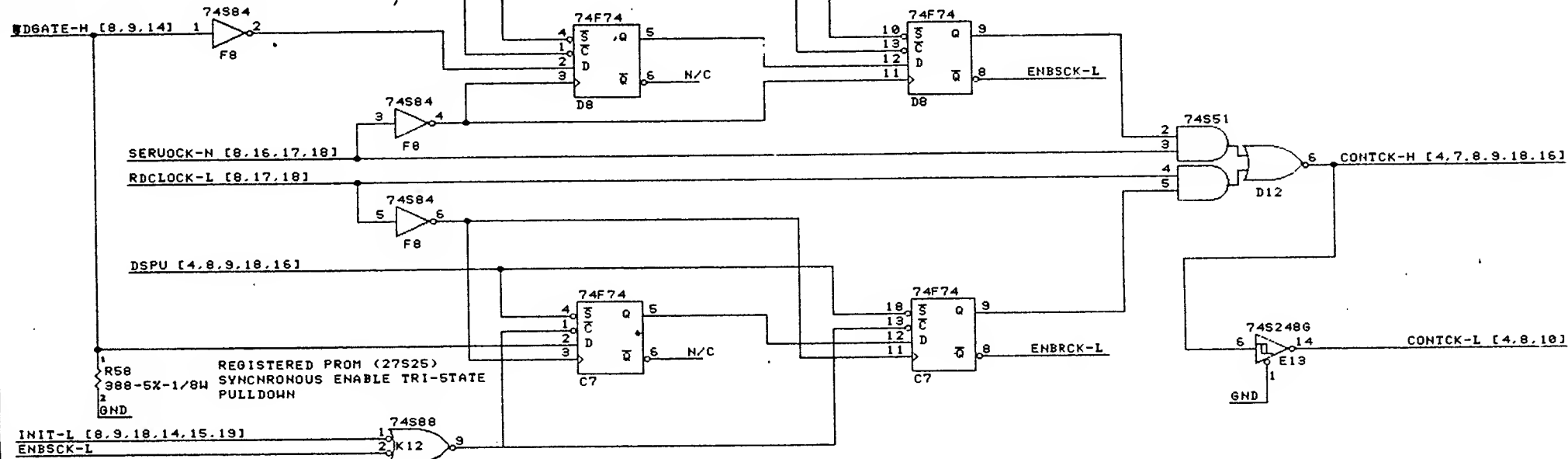
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TITLE: 451
SERDES W/PIPELINE

| | | | |
|-----------|----------------------------|-------|----------|
| SIZE B | DRAWING NO. 300-160-400 | | REV G |
| SHEET | 7 OF 21 | LEVEL | 2 |

INIT-L [8.9.18.14.15.19]

ENBRCK-L



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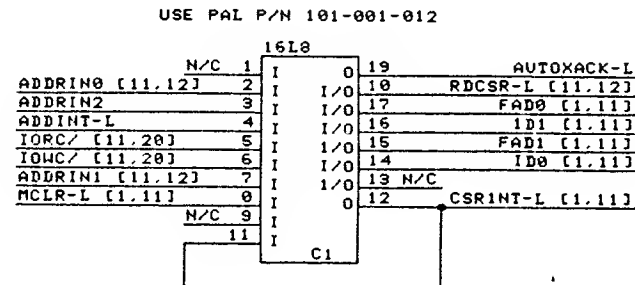
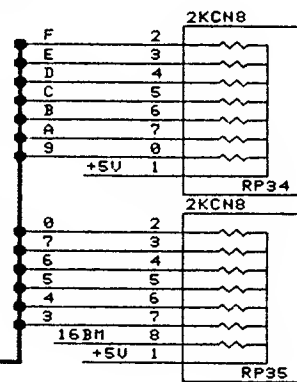
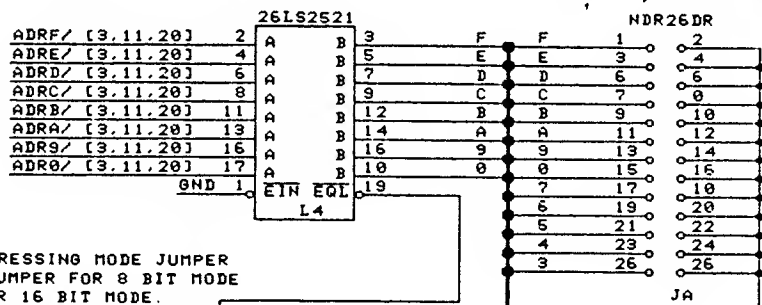
L714

| | | |
|--|----------------------------|----------|
| TITLE: 451 CLOCK & EVENT SYNCHRONIZER | | |
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 8 | OF 21 | LEVEL 2 |

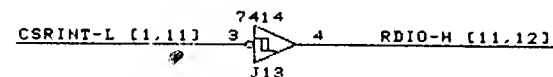
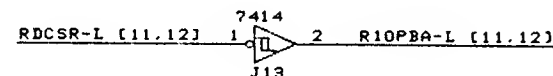
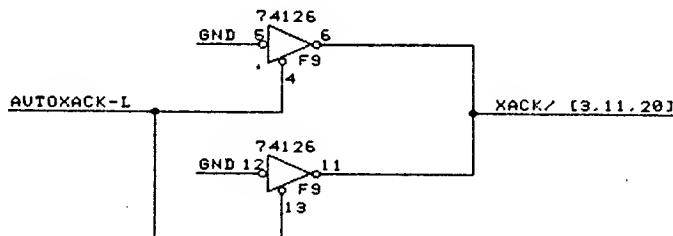
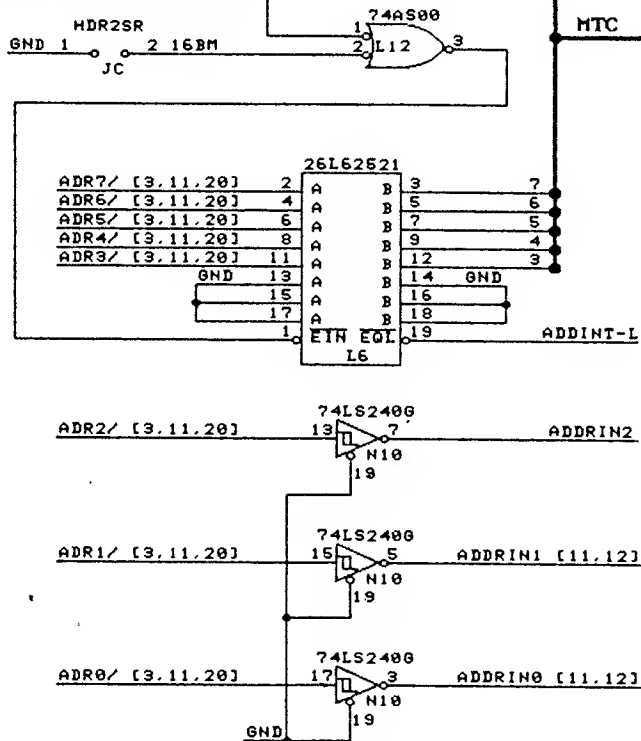
MULTIBUS ADDRESS BUS RECEIVERS/BUFFERS

BASE ADDRESS JUMPERS

INSTALL JUMPER FOR RESPECTIVE ADDRESS BIT ON.
REMOVE JUMPER FOR BIT OFF.

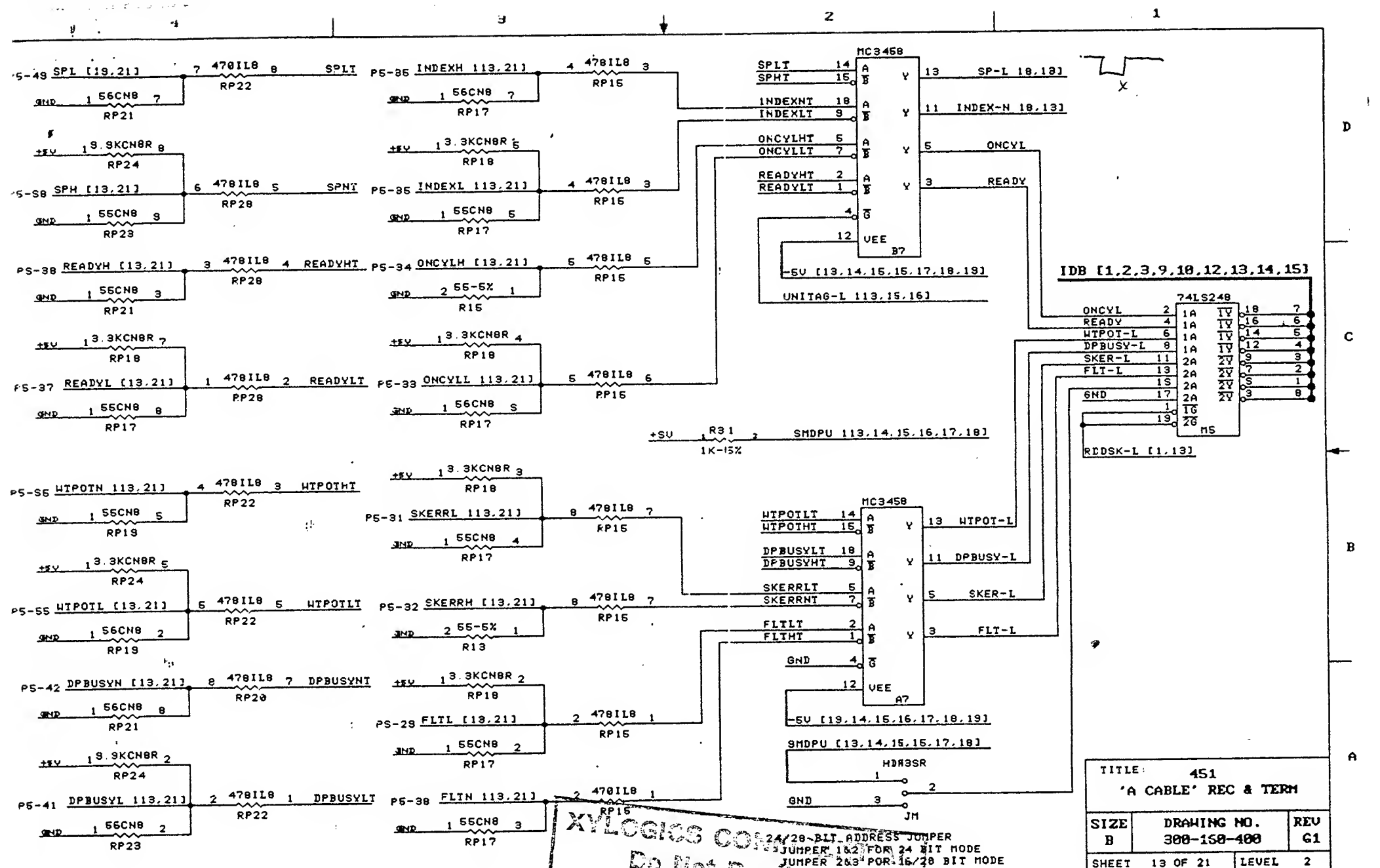


0/16 BIT ADDRESSING MODE JUMPER
INSTALL JUMPER FOR 8 BIT MODE
REMOVE FOR 16 BIT MODE.



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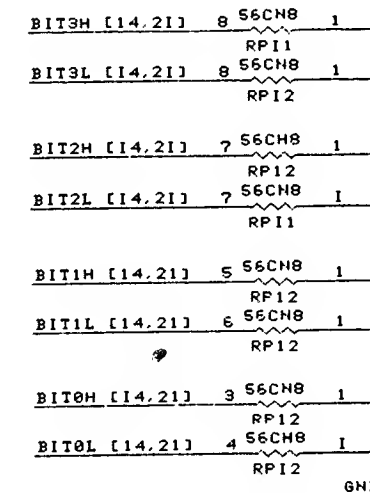
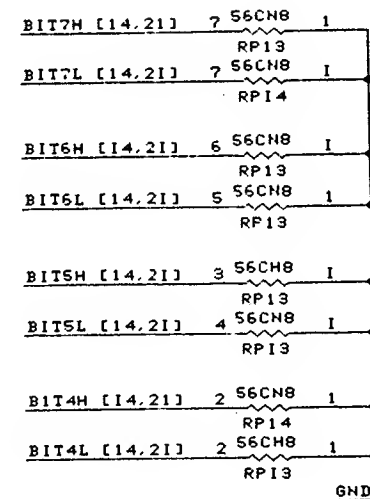
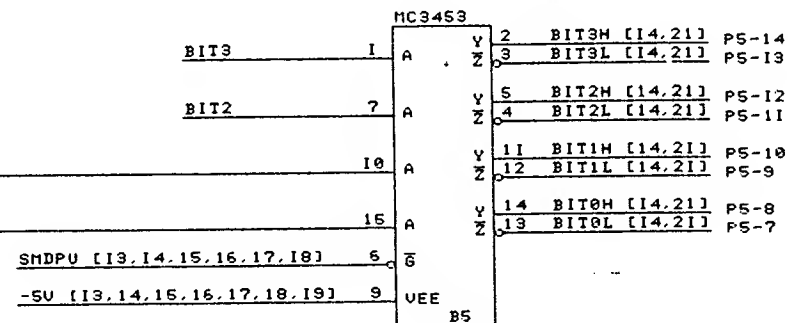
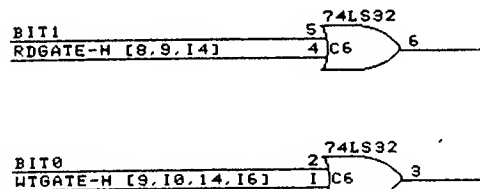
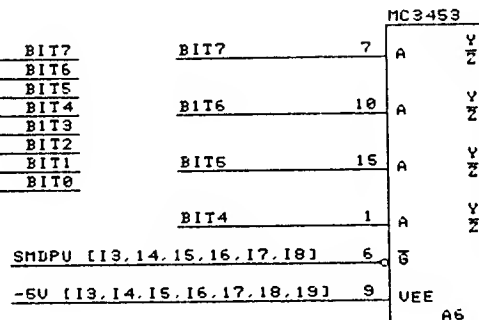
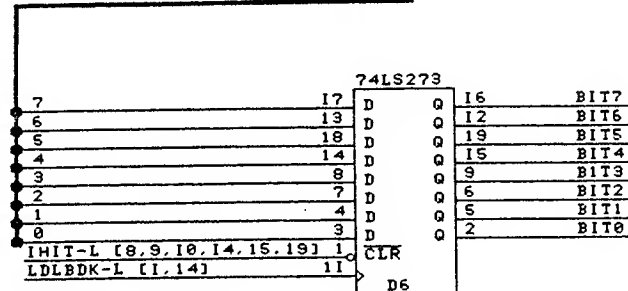
| | | |
|---------------------------------|----------------------------|----------|
| TITLE: 451 I/O CONTROL LOGIC | | |
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 11 OF 21 | LEVEL 2 | |



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| | | |
|------------------------------------|----------------------------|-----------|
| TITLE: 451 'A CABLE' REC & TERM | | |
| SIZE B | DRAWING NO. 300-150-400 | REV G1 |
| SHEET 13 OF 21 | LEVEL 2 | |

1DB [1,2,3,9,10,12,13,14,15]



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| | | |
|----------------------------|-------------|---------|
| TITLE: 451 | | |
| 1/2 'A CABLE' DRIVE & BIAS | | |
| SIZE | DRAWING NO. | REV |
| B | 300-160-400 | G |
| SHEET | 14 OF 21 | LEVEL 2 |

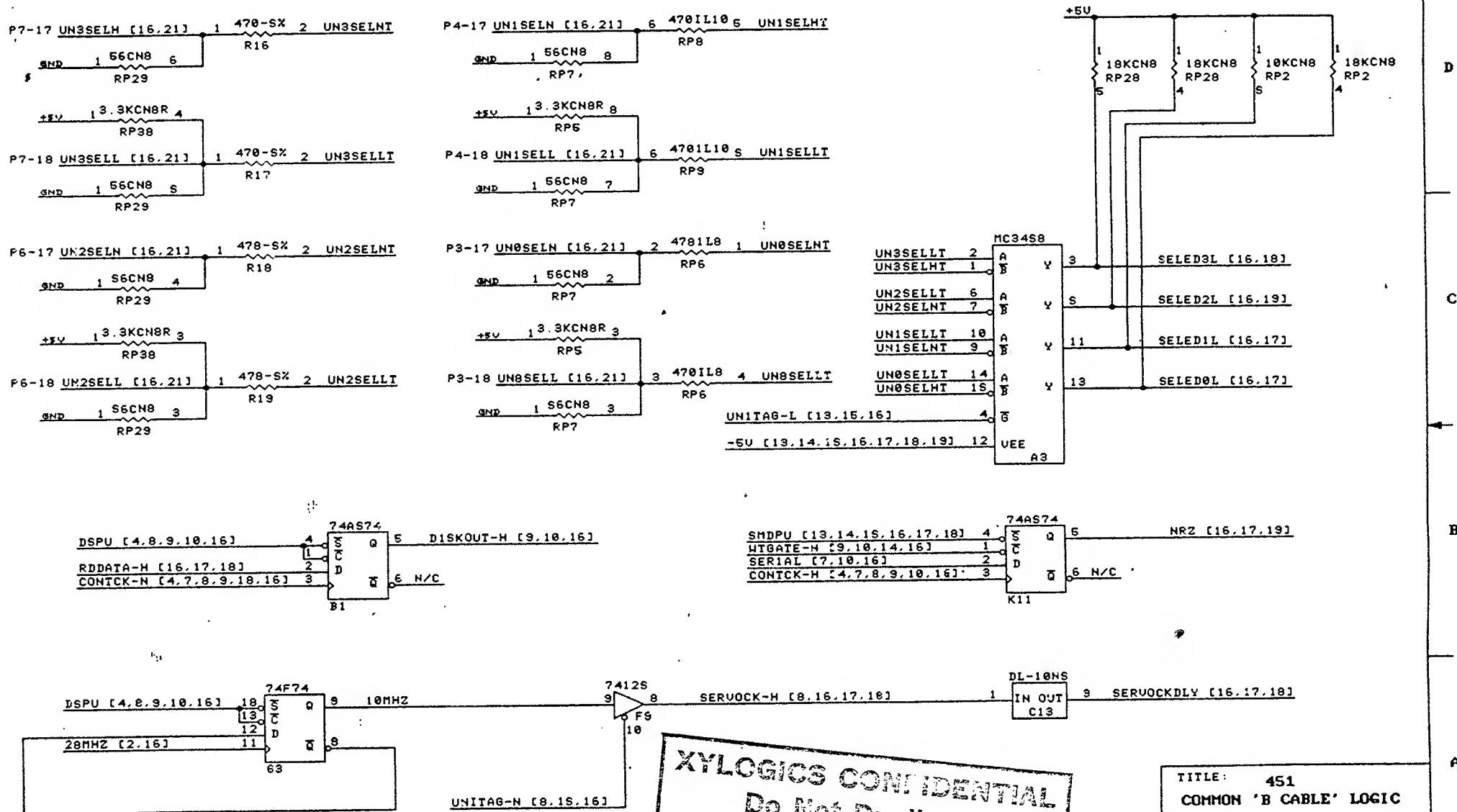
[illegible]

| | | |
|----------------------------|----------------------------|----------|
| TITLE: 451 | | |
| 1/2 'A CABLE' DRIVE & BIAS | | |
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 15 OF 21 | LEVEL 2 | |

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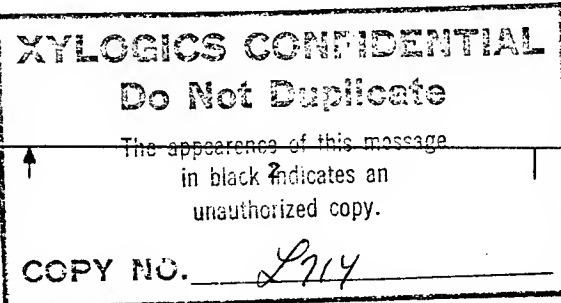
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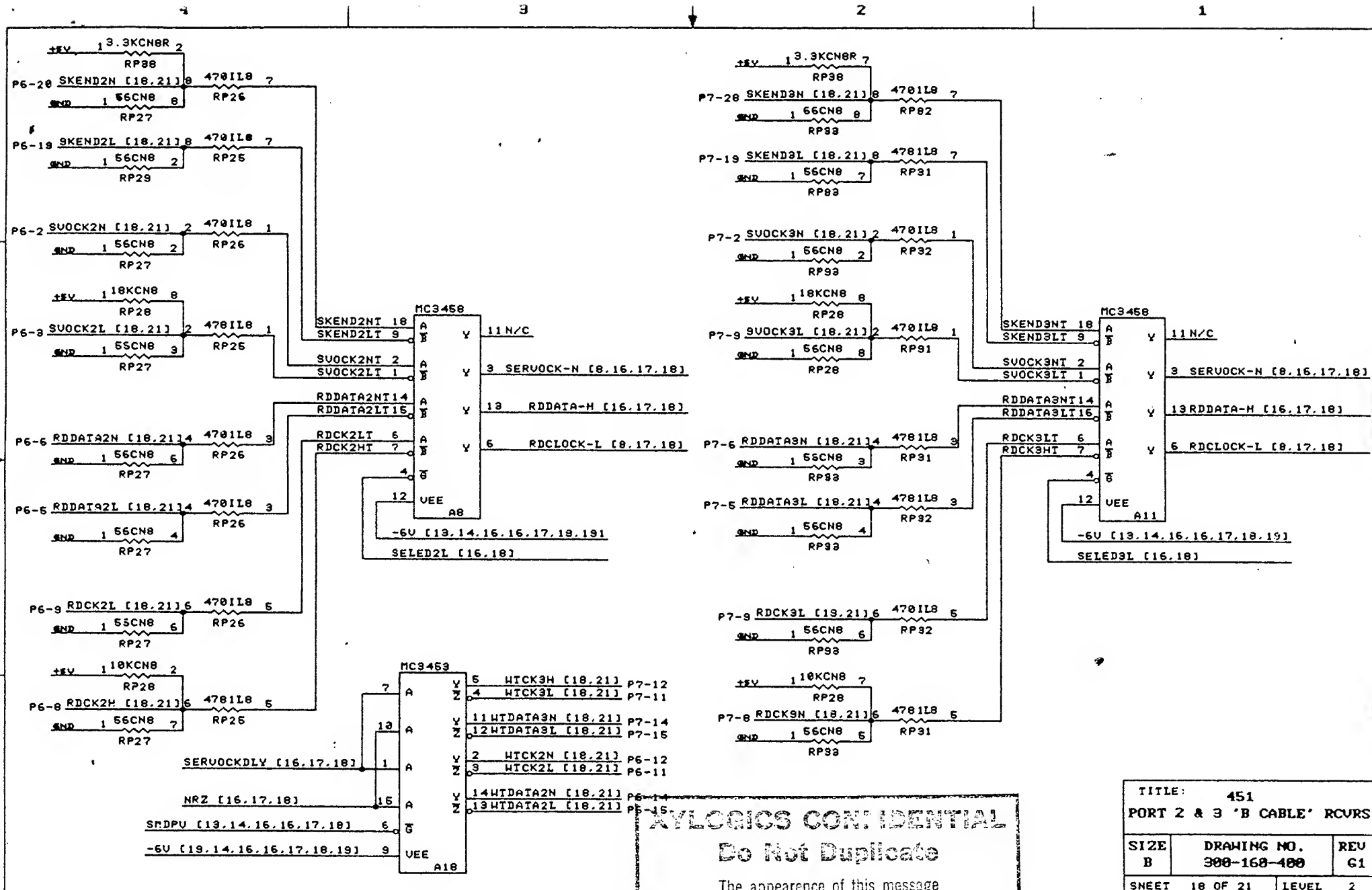
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| | | |
|--------------------------------------|----------------------------|-----------|
| TITLE: 451 COMMON 'B CABLE' LOGIC | | |
| SIZE B | DRAWING NO. 300-160-400 | REV C1 |
| SHEET 16 OF 21 | LEVEL 2 | |





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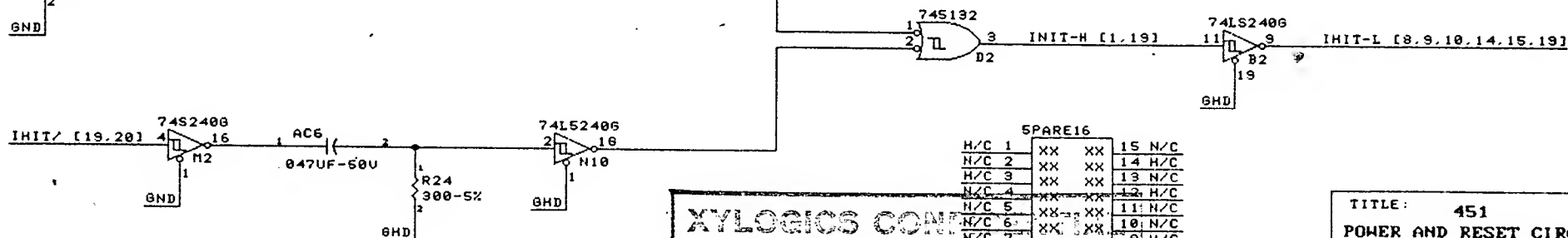
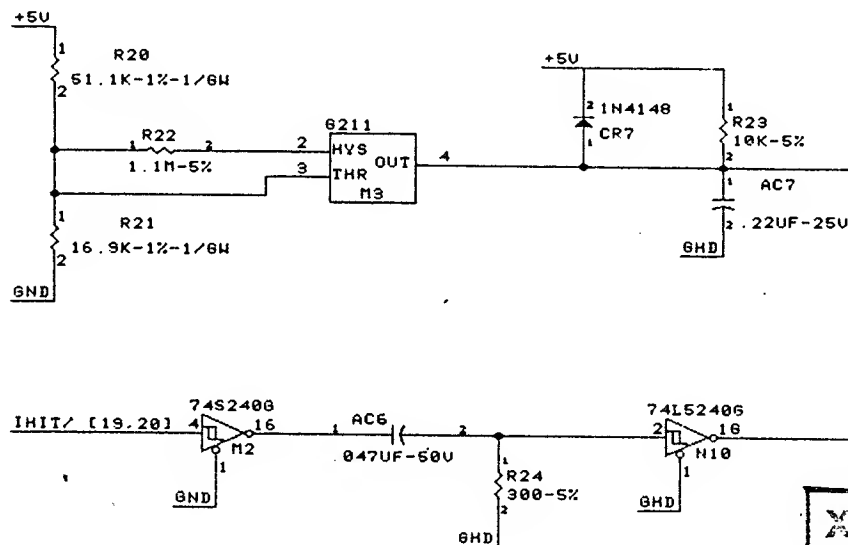
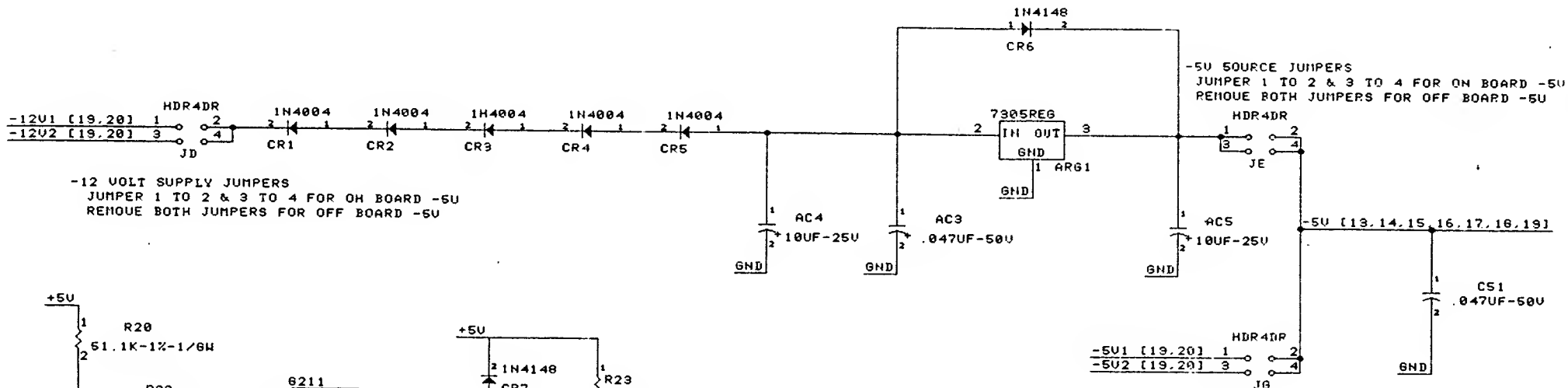
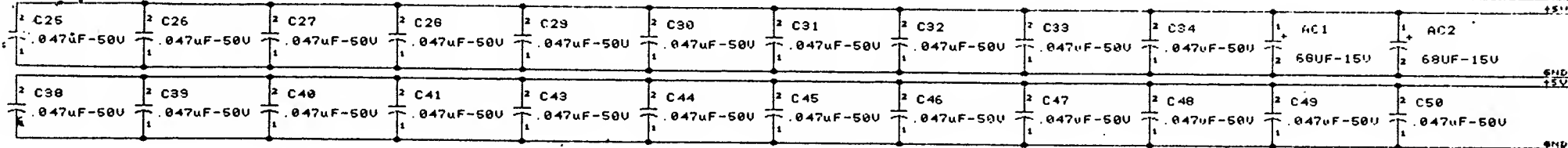
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TITLE: 451
PORT 2 & 3 'B CABLE' RCURS

| SIZE | DRAWING NO. | REV |
|-------|-------------|---------|
| B | 300-160-400 | G1 |
| SHEET | 18 OF 21 | LEVEL 2 |



| SPARE16 | | | |
|---------|----|----|--------|
| H/C 1 | XX | XX | 15 N/C |
| N/C 2 | XX | XX | 14 H/C |
| H/C 3 | XX | XX | 13 N/C |
| N/C 4 | XX | XX | 12 H/C |
| N/C 5 | XX | XX | 11 N/C |
| N/C 6 | XX | XX | 10 N/C |
| N/C 7 | XX | XX | 9 H/C |
| H11 | | | |

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TITLE: 451
POWER AND RESET CIRCUITRY

| SIZE | DRAWING NO. | REV |
|-------|-------------|---------|
| B | 300-160-400 | G |
| SHEET | 19 OF 21 | LEVEL 2 |

ECON86/156

| | | | | | |
|-----------------|----|-------|-------|----|-----------------|
| GND | 1 | GND | GND | 2 | GND |
| +5V | 3 | +5V | +5V | 4 | +5V |
| +5V | 5 | +5V | +5V | 6 | +5V |
| N/C | 7 | +12V | +12V | 8 | N/C |
| -6V1 [19.20] | 9 | | | 10 | -5V2 [19.20] |
| GND | 11 | GND | GND | 12 | GND |
| BCLK/ [3.20] | 13 | BCLK* | INIT* | 14 | INIT/ [19.20] |
| BPRN/ [3.20] | 15 | BPRN* | BPRO* | 16 | BPRO/ [3.20] |
| BUSV/ [3.20] | 17 | BUSV* | BREQ* | 19 | BREQ/ [3.20] |
| MRDC/ [3.20] | 19 | MRDC* | MWTC* | 20 | MWTC/ [3.20] |
| IORC/ [11.20] | 21 | IORC* | IOHC* | 22 | IOHC/ [11.20] |
| XACK/ [3.11.20] | 23 | XACK* | INN1* | 24 | N/C |
| N/C | 26 | LOCK* | INH2* | 26 | N/C |
| BHEN/ [3.20] | 27 | BHEN* | AD10* | 28 | ADR10/ [3.20] |
| CBRQ/ [3.20] | 29 | CBRQ* | AD11* | 30 | ADR11/ [3.20] |
| N/C | 31 | CCLK* | AD12* | 32 | ADR12/ [3.20] |
| N/C | 33 | INTA* | AD13* | 34 | ADR13/ [3.20] |
| INT6/ [12.20] | 35 | INT6* | INT7* | 36 | INT7/ [12.20] |
| INT4/ [12.20] | 37 | INT4* | INT5* | 38 | INT5/ [12.20] |
| INT2/ [12.20] | 39 | INT2* | INT3* | 40 | INT3/ [12.20] |
| INT0/ [12.20] | 41 | INT0* | INT1* | 42 | INT1/ [12.20] |
| ADRE/ [3.11.20] | 43 | ADRE* | ADRF* | 44 | ADRF/ [3.11.20] |
| ADRC/ [3.11.20] | 45 | ADRC* | ADRD* | 46 | ADRD/ [3.11.20] |
| ADRA/ [3.11.20] | 47 | ADRA* | ADRB* | 48 | ADRB/ [3.11.20] |
| ADR8/ [3.11.20] | 49 | ADR8* | ADR9* | 50 | ADR9/ [3.11.20] |
| ADR6/ [3.11.20] | 51 | ADR6* | ADR7* | 52 | ADR7/ [3.11.20] |
| ADR4/ [3.11.20] | 53 | ADR4* | ADR6* | 54 | ADR6/ [3.11.20] |
| ADR2/ [3.11.20] | 55 | ADR2* | ADR3* | 56 | ADR3/ [3.11.20] |
| ADR0/ [3.11.20] | 57 | ADR0* | ADR1* | 58 | ADR1/ [3.11.20] |
| DATE/ [6.20] | 59 | DATE* | DATF* | 60 | DATF/ [6.20] |
| DATC/ [6.20] | 61 | DATC* | DATD* | 62 | DATD/ [6.20] |
| DAT8/ [6.20] | 63 | DAT8* | DATB* | 64 | DATB/ [6.20] |
| DAT9/ [6.20] | 65 | DAT9* | DAT9* | 66 | DAT9/ [6.20] |
| DAT6/ [6.12.20] | 67 | DAT6* | DAT7* | 68 | DAT7/ [6.12.20] |
| DAT4/ [6.12.20] | 69 | DAT4* | DAT6* | 70 | DAT6/ [6.12.20] |
| DAT2/ [6.12.20] | 71 | DAT2* | DAT3* | 72 | DAT3/ [6.12.20] |
| DAT0/ [6.12.20] | 73 | DAT0* | DAT1* | 74 | DAT1/ [6.12.20] |
| GND | 75 | GND | GND | 76 | GND |
| N/C | 77 | | | 78 | N/C |
| -12V1 [19.20] | 79 | -12V | -12V | 80 | -12V2 [19.20] |
| +6V | 81 | +6V | +6V | 82 | +5V |
| +5V | 83 | +6V | +5V | 84 | +5V |
| GND | 85 | GND | GND | 86 | GND |

P1

COMPONENT SIDE

SOLDER SIDE

ECON60/100

| | | | |
|---------------|----|--------|-----------------|
| N/C | 1 | 2 | N/C |
| N/C | 3 | 4 | N/C |
| N/C | 5 | 6 | N/C |
| N/C | 7 | 8 | N/C |
| N/C | 9 | 10 | N/C |
| N/C | 11 | 12 | N/C |
| N/C | 13 | 14 | N/C |
| N/C | 15 | 16 | N/C |
| N/C | 17 | 18 | ACLOW/ [15.20] |
| N/C | 19 | 20 | N/C |
| N/C | 21 | 22 | N/C |
| N/C | 23 | 24 | N/C |
| N/C | 25 | 26 | N/C |
| N/C | 27 | 28 | N/C |
| N/C | 29 | 30 | N/C |
| N/C | 31 | 32 | N/C |
| N/C | 33 | 34 | N/C |
| N/C | 35 | 36 | N/C |
| N/C | 37 | 38 | N/C |
| N/C | 39 | 40 | N/C |
| N/C | 41 | 42 | MACTIVE/ [1.20] |
| N/C | 43 | 44 | N/C |
| N/C | 45 | 46 | N/C |
| N/C | 47 | 48 | N/C |
| N/C | 49 | 50 | N/C |
| N/C | 51 | 52 | N/C |
| N/C | 53 | 54 | N/C |
| ADR15/ [3.20] | 55 | ADR15* | ADR17/ [3.20] |
| ADR14/ [3.20] | 57 | ADR14* | ADR15/ [3.20] |
| N/C | 59 | 60 | N/C |

P2

COMPONENT SIDE

SOLDER SIDE

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714

TITLE: 451
MULTIBUS CONNECTORS

| | | |
|-------------------|----------------------------|----------|
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 20 OF 21 | LEVEL 2 | |

| CONNRA68/100 | | | |
|-------------------|----|---------|-----------------|
| TAG1L [15.21] | 1 | TAG1L | TAG1H [15.21] |
| TAG2L [15.21] | 3 | TAG2L | TAG2H [15.21] |
| TAG3L [15.21] | 5 | TAG3L | TAG3H [16.21] |
| BIT8L [14.21] | 7 | BIT8L | BIT8H [14.21] |
| BIT1L [14.21] | 9 | BIT1L | BIT1H [14.21] |
| BIT2L [14.21] | 11 | BIT2L | BIT2H [14.21] |
| BIT3L [14.21] | 13 | BIT3L | BIT3H [14.21] |
| BIT4L [14.21] | 15 | BIT4L | BIT4H [14.21] |
| BIT5L [14.21] | 17 | BIT5L | BIT5H [14.21] |
| BIT6L [14.21] | 19 | BIT6L | BIT6H [14.21] |
| BIT7L [14.21] | 21 | BIT7L | BIT7H [14.21] |
| BIT8L [15.21] | 23 | BIT8L | BIT8H [15.21] |
| BIT9L [15.21] | 25 | BIT9L | BIT9H [15.21] |
| OCDL [15.21] | 27 | OCDL | OCDH [15.21] |
| FLTL [13.21] | 29 | FLTL | FLTH [13.21] |
| SKERRL [13.21] | 31 | SKERRL | SKERRH [13.21] |
| ONCVLL [13.21] | 33 | ONCVLL | ONCVLH [13.21] |
| INDEXL [13.21] | 35 | INDEXL | INDEXH [13.21] |
| RDVYL [13.21] | 37 | RDVYL | RDVH [13.21] |
| H/C 39 | | AMFL | AMFH [13.21] |
| DPBUSVL [13.21] | 41 | DPBUSVL | DPBUSVH [13.21] |
| UNSELTAOL [15.21] | 43 | UNSLTL | UNSLTH [15.21] |
| UNSEL1L [15.21] | 45 | UNSL1L | UNSL1H [15.21] |
| UNSEL2L [15.21] | 47 | UNSL2L | UNSL2H [15.21] |
| SPL [13.21] | 49 | SPL | SPH [13.21] |
| UNSEL4L [15.21] | 51 | UNSL4L | UNSL4H [15.21] |
| UNSEL8L [15.21] | 53 | UNSL8L | UNSL8H [15.21] |
| WTPOTL [13.21] | 55 | WTPRTL | WTPRTH [13.21] |
| GND | 57 | PICK | HOLD |
| BIT10L [15.21] | 59 | SPAREL | SPAREH |

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| CONNRA26/100 | | | |
|------------------|----|--------|--------|
| GND | 1 | GND | SUOCKH |
| SUOCK0L [17.21] | 3 | SUOCKL | GND |
| RDDATA0L [17.21] | 5 | RDDATL | RDDATH |
| GND | 7 | GND | RDCKH |
| RDCK0L [17.21] | 9 | RDCKL | GND |
| WTCK0L [17.21] | 11 | WTCKL | WTCKH |
| GND | 13 | GND | WTDATH |
| WTDATA0L [17.21] | 15 | WTDATL | GND |
| UN0SELH [16.21] | 17 | UNSELH | UNSELL |
| SKEND0L [17.21] | 19 | SKENDL | SKENDH |
| GND | 21 | GND | RINDXH |
| N/C 23 | | RINDXH | GND |
| N/C 25 | | RSPL | RSPH |

P3

| CONNRA26/100 | | | |
|------------------|----|--------|--------|
| GND | 1 | GND | SUOCKH |
| SUOCK2L [18.21] | 3 | SUOCKL | GND |
| RDDATA2L [18.21] | 5 | RDDATL | RDDATH |
| GND | 7 | GND | RDCKH |
| RDCK2L [18.21] | 9 | RDCKL | GND |
| WTCK2L [18.21] | 11 | WTCKL | WTCKH |
| GND | 13 | GND | WTDATH |
| WTDATA2L [18.21] | 15 | WTDATL | GND |
| UN2SELH [16.21] | 17 | UNSELH | UNSELL |
| SKEND2L [18.21] | 19 | SKENDL | SKENDH |
| GND | 21 | GND | RINDXH |
| N/C 23 | | RINDXH | GND |
| N/C 25 | | RSPL | RSPH |

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| CONNRA26/100 | | | |
|------------------|----|--------|--------|
| GND | 1 | GND | SUOCKH |
| SUOCK1L [17.21] | 3 | SUOCKL | GND |
| RDDATA1L [17.21] | 5 | RDDATL | RDDATH |
| GND | 7 | GND | RDCKH |
| RDCK1L [17.21] | 9 | RDCKL | GND |
| WTCK1L [17.21] | 11 | WTCKL | WTCKH |
| GND | 13 | GND | WTDATH |
| WTDATA1L [17.21] | 15 | WTDATL | GND |
| UN1SELH [16.21] | 17 | UNSELH | UNSELL |
| SKEND1L [17.21] | 19 | SKENDL | SKENDH |
| GND | 21 | GND | RINDXH |
| H/C 23 | | RINDXH | GND |
| N/C 25 | | RSPL | RSPH |

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| CONNRA26/100 | | | |
|------------------|----|--------|--------|
| GND | 1 | GND | SUOCKH |
| SUOCK3L [18.21] | 3 | SUOCKL | GND |
| RDDATA3L [18.21] | 5 | RDDATL | RDDATH |
| GND | 7 | GND | RDCKH |
| RDCK3L [18.21] | 9 | RDCKL | GND |
| WTCK3L [18.21] | 11 | WTCKL | WTCKH |
| GND | 13 | GND | WTDATH |
| WTDATA3L [18.21] | 15 | WTDATL | GND |
| UN3SELH [16.21] | 17 | UNSELH | UNSELL |
| SKEND3L [18.21] | 19 | SKENDL | SKENDH |
| GND | 21 | GND | RINDXH |
| N/C 23 | | RINDXH | GND |
| N/C 25 | | RSPL | RSPH |

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| | | |
|------------------------------|----------------------------|----------|
| TITLE: 451 SMD CONNECTORS | | |
| SIZE B | DRAWING NO. 300-160-400 | REV G |
| SHEET 21 OF 21 | LEVEL 2 | |

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